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ABSTRACT

The hypothesis that the acquisition order of relational words directly reflects the complexity of these words in formal linguistic analysis was tested for the singular, non-neuter person pronouns of English. Data on the development of comprehension of these pronouns gathered in two conversational situations, child as person addressed and child as onlooker, from six children (about 2 years of age) in a five-month longitudinal study indicated that the acquisition order of these words does not directly reflect linguistic complexity but rather the complexity of the percepts underlying the semantic concepts involved. Additional data indicated that children's decentering in the speech event also plays a critical role in the discrimination of the relevant semantic concepts by allowing the child to appreciate the relational nature of person pronouns. These results are interpreted as evidence against the use of formal linguistic representation as an explanation of semantic development. (Author)

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LINGUISTIC COMPLEXITY VERSUS PERCEPTUAL COMPLEXITY IN PERSON PRONOUN ACQUISITION

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Linguistic Complexity versus Perceptual Complexity in Person Pronoun Acquisition[1]

Elizabeth A. Sharpless[2]

It is well-known that children generally learn the members of relational word sets - word sets such as more-less, before-after - in a standard order. One interpretation of this phenomenon which has received much currency argues that these orderings directly reflect the relative complexity of these words in formal linguistic analysis (H. Clark, 1973). On this interpretation, the fact that more is learned earlier than less is viewed as a consequence of the fact that more is the less complex member of this pair in formal linguistic analysis.

The study reported herein evaluated the linguistic complexity hypothesis in the case of children's acquisition of the singular, non-neuter person pronouns of English.[3] Considering the acquisition order of these pronouns by person - first, second, third - the results indicated that the critical variable determining acquisition order in this case was not linguistic but perceptual complexity. The data further indicated that the child's decentering in the speech event also plays a central role in the acquisition of pronominal meanings. These results are taken as evidence against the use of formal devices as explanations of semantic development.

Predicting pronoun acquisition order from linguistic complexity.

In formal linguistic analysis, the meanings of words in a relational word set are represented as a set of binary distinctive feature contrasts. One of the binary values, generally the positive value, can often be determined to be unmarked, i.e., less complex, according to

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3. These are: first person - I, me, my, mine; second person - you, your, yours; third person - he, him, his, she, her, hers.

a variety of criteria (Greenberg, 1966). The set of feature contrasts is arranged hierarchially with the features at the top of the hierarchy being the more general ones, i.e., the features which are relevant to defining the greatest number of words in the set (Bierwisch, 1967).

In learning a set of relational words, the child's task is to learn the list of semantic feature contrasts which define the words. The fact that relational words are learned in standard orders establishes that children do not go about this task in a random fashion but rather consistently learn certain aspects of a feature analysis before others. It is the contention of the linguistic complexity hypothesis that the sequence children follow directly reflects linguistic complexity as indicated by markedness and feature ordering. That is, children learn the unmarked value of each feature before the marked value; children learn the feature contrasts in an order congruent with the order in formal linguistic analysis. To apply the linguistic complexity hypothesis to person pronouns, therefore, we must first specify the feature contrasts which define the three pronoun persons and then determine how markedness and feature ordering apply to this feature analysis.

The two feature analysis of person pronouns used in the research is due to Huxley (1970). The analysis is motivated by a consideration of the organization of the speech event in terms of its several participants. The focal point of any speech event is the speaker. Indeed, any speech event presupposes a speaker. The speaker, together with the person addressed, form the communication dyad. As participants in the dyad, the speaker and person addressed are set off from all third parties. Thus, we can distinguish two feature contrasts:

	first person	second person	third person
Ego	+	-	-
Involvement in the Communication Dyad	+	+	-

+Ego (or Speaker) versus -Ego which contrasts first person with second and third person; and +Involvement in the Communication Dyad versus -Involvement, which contrasts first and second person with third person.

Which of two categories is the unmarked one is often determined by considering plural formation. The category used to represent the

combination of the two - day for day and night, padres for padre and madre - is taken to be the dominant, i.e., unmarked category. Writing on the person pronouns, Forchheimer (1951) has observed that it is universally the case that, when "the speaker is part of the group, the whole group becomes a first person plural" (p. 96). Translated into terms of feature analysis, this means that, when first person (+Ego) is combined with second or third person (-Ego), the resulting plural is defined as +Ego, e.g., in English, I combined with you results in we, a first person plural. Since +Ego represents the combined categories, +Ego and -Ego, in the plural, it is +Ego which is the dominant, unmarked value. A parallel pattern holds for +,-Involvement. "If one addressed and many others are mentioned, the whole becomes a plural of the second person..."(Forchheimer, p. 96). In terms of feature analysis, this means that, when second person (+Involvement) is combined with third person (-Involvement), the resulting plural is defined as +Involvement. In English, for example, you combined with he results in a second person plural, a plural you as in "If you and he don't eat dinner, neither of you will get dessert." Since +Involvement represents the combined categories, +Involvement and -Involvement, in the plural, it is +Involvement which is the dominant, unmarked value.

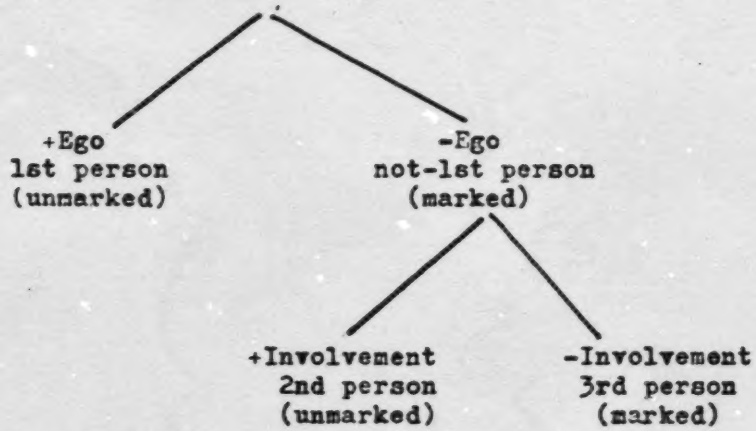
Turning to feature ordering, we appear to have a problem. According to the matrix on pg. 2, both features are equally general since both play a role in defining each of the pronoun persons. The problem can be resolved, however, is we can find grounds for selecting one of the features as the more basic. This will permit us to order the features and as a consequence enable us to write a redundancy rule eliminating one of the cell entries for the less basic feature from the matrix. The simplicity thus achieved will reveal the more basic feature to be the more general one, as well.

Huxley (1970) has argued that, of the two features, it is Ego which is more basic. Her decision is motivated by the following considerations: the speaker is the focal point of the speech event and thus the primary dichotomy is between the speaker and all others; every utterance necessarily implies "I, the speaker, say that...". Lyons (1968) has also argued that the primary contrast is between

first person and not-first person, i.e., +,-Ego. For Lyons, this decision is motivated by the fact that there are a greater variety of plural forms for first person versus second and third across languages. While Lyons does not note the fact, his argument gains force from Forchheimer's observation that in the historical development of plural systems for pronouns, the plurals begin in first person and subsequently spread to second and third.

With the features ordered Ego before Involvement, the redundancy rule we write is +Ego predicts +Involvement. This rule eliminates +Involvement from the feature specifications for first person. In plain English, what this rule states is that first person can be defined simply as "being speaker". The further specification, "being involved in the communication dyad," is unnecessary since, given that one is speaker, it follows that one is involved in the communication dyad. With +Involvement eliminated from the definition of first person, Ego emerges as the more general feature.

The feature analysis for person pronouns can now be represented in terms of a tree diagram which reflects the relative linguistic complexity of the features and feature values:



The tree diagram helps explicate the order in which person pronouns should be acquired if this order directly reflects linguistic complexity. Specifically, the child will initially learn the contrast +,-Ego, learning first the unmarked value of this contrast. Thus, first person should be learned first. Following this, the child will learn the two persons - second and third - which comprise -Ego, i.e., not-first person. To learn either of these, the child must also learn the

contrast +,-Involvement which distinguishes between them. Given that the child will learn unmarked Involvement before marked Involvement, second person should be learned before third. Thus, the predicted order is: first person, second person, third person.[4]

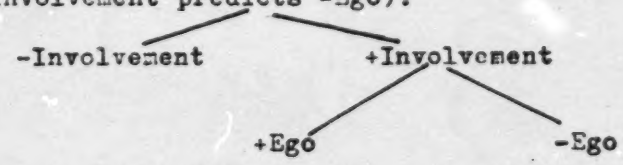
Data from descriptive studies of speech production do in fact support this prediction. First person singular is usually learned first, appearing non-stereotypically in speech at about 20 months (Leopold, 1949). The paucity of data on pronouns in speech between 24 and 30 months makes the exact time of the emergence of second and third person singular more difficult to place. However, both are learned by about 36 months with second person gaining in frequency earlier than third person (Goodenough, 1938; Young, 1942; Huxley, 1970).

The data from speech production, however, cannot be taken as definitive evidence for the linguistic complexity hypothesis. H. Clark (1973) cites several factors besides linguistic complexity which may be manifested in the acquisition order of relational words in speech. He states that the critical test of the hypothesis must be the acquisition order found in comprehension.

An experiment to determine person pronoun acquisition order.

Method. Since a key feature of person pronouns is their shifting reference, it was not deemed sufficient to test understanding of these words only when the child was directly addressed. One wants to know, at least, whether the child understands you when it refers to others besides himself. This consideration called attention to the

4. It is worth noting the following: given that the positive value of each feature is unmarked, the only possible way to order the two features so that the linguistic complexity hypothesis makes sense is Ego before Involvement. If Involvement were ordered before Ego, we would get the following tree diagram (incorporating the redundancy rule, -Involvement predicts -Ego):



With this arrangement of features, the prediction would be for children to learn third person - marked Involvement - initially. Thus, considerations of linguistic complexity are in fact irrelevant to the claim that Ego will be learned before Involvement.

existence of two distinct comprehension contexts - child as person addressed, child as onlooker - a variable which, as it turned out, provided telling evidence against the linguistic complexity hypothesis.

Three boys and 3 girls - all middle class, native speakers of English - were studied over a period of about five months beginning when they were between 20-22 months old. Comprehension data for each child individually were gathered at four measurement periods. Each measurement period involved five half-hour test sessions conducted on consecutive days. An interval of four weeks separated the end of one measurement period from the beginning of the next.[5]

As noted above, and as illustrated in Fig. 1 (pg. 7), the comprehension tests required the children to respond to requests in two types of conversational situation: one in which the child was person addressed; one in which the child was onlooker. Each conversational situation was constructed so that, given a request with a particular pronoun person - first, second, third - the child could make a response to speaker, person addressed or onlooker (as well as miscellaneous responses). This was accomplished as follows.

In the situation in which the child was person addressed, two experimenters alternated as speaker and onlooker. When in the person addressed role, the child was asked directly to respond to requests which systemically varied the person pronouns, e.g., the speaker would say: "Susie, tickle my nose"; "Susie, tickle your nose";"Susie, tickle his/her nose" (the gender of the pronoun being matched to the sex of the onlooker). In the situation in which the child was onlooker, two experimenters alternated as speaker and person addressed. When in the onlooker role, the child was asked indirectly to respond to requests which , again, systemically varied the person pronoun, e.g., the speaker would say: "Susie will tickle my nose," etc.[6]

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5. Because of illnesses and the like, this precise schedule was not always maintained. However, deviations were infrequent and minor.

6. The design dictated that the boys were tested only on his and the girls only on her in the onlooker situation. To match the person addressed situation with the onlooker situation in this respect, only female experimenters worked with the girls. For the boys, it was possible to have only one of the experimenters be male since the author had to act as an experimenter with all subjects. Thus, in the person addressed situation, the girls were tested only on her, the boys on his and her.

Figure 1: Testing Paradigms for the Two Conversational Situations

The situation in which the child was person addressed was tested during the first three measurement periods so that longitudinal data for each of the 6 children was obtained for this context. The more difficult situation in which the child was onlooker was tested only during the final measurement period. Since it was not possible to add further measurement periods to obtain longitudinal data for this context, the tests of the 6 children as onlookers were supplemented by testing 3 additional children of similar age. These three, also middle class native English speakers, were tested for one measurement period in the onlooker situation.

At each measurement period, an effort was made to administer to each child a total of 24 requests, 8 for each pronoun person. While the children were not always cooperative enough to allow all 24 requests to be administered, it was possible to obtain responses to at least 20 of the requests about 85% of the time. There were never fewer than 14 requests responded to at a given measurement period.

Three final points on methodology. (1) Only genitive pronouns were employed since requests involving other grammatical cases would have uniquely marked with the reflexive, requests to the child to respond to himself: "Tickle yourself" in the person addressed situation; "Tickle himself" in the onlooker situation. Because the order of acquisition of possessive pronouns is identical to that of the non-possessive forms in speech production (Young, 1942), it was felt that limiting the stimuli in this way would not limit the generality of the results. (2) To insure that responses evidenced linguistic understanding of pronouns, kinesic variables were controlled in this way: no gestures were used in testing and, in each conversational situation, the speaker controlled visual cues by looking only at the person addressed. (3) The children were praised for any response to a speech event role, whether the correct role or not, so that cooperation would be maintained while training was avoided.

Results. The data analysis determined acquisition order in each conversational situation. It had been hoped at the beginning of the research to obtain longitudinal data for each child in each conversational situation such that the developmental progression for each child from no understanding to full understanding of each pronoun could be charted. As noted earlier, this was not possible in the on-

looker situation. The results revealed that this goal could not be realized for the person addressed situation either since the children were at different levels of comprehension and no child progressed from zero to perfect understanding over the three measurement periods involved. Consequently, it was decided to order the children in terms of comprehension in each conversational situation.[7] The particular of the data analysis were as follows.

An initial analysis of results tallied each child's responses at each measurement period to each pronoun person according to 4 response categories: response to speaker; to person addressed; to onlooker; other responses. This tally revealed the existence of various response biases; however, these biases did not reflect the clear-cut patterns of lexical overextension found in other studies of relational words (e.g., E. Clark, 1971).

To obtain a measure of pronoun comprehension which controlled for these biases, a phi-correlation (Walker & Lev, 1953) was used. The sample correlation matrix for comprehension of my shows how this statistic worked.

Linguistic Stimulus	Responses to Speaker	All Other Responses	Total
my	7	1	8
your; his,her	2	14	16
Total	9	15	24

$\text{phi} = +.73, \quad p \leq .01$

Briefly, the phi-correlation provided a measure of the extent to which the children had discriminated the appropriate pronoun for each speech event role. The phi-correlation may vary from +1.0, indicating that a given pronoun and the role it designates are each paired only with the other, to -1.0, indicating that a given pronoun is never paired with its correct role but that each is always paired inappropriately. Correlations for each child were computed for each pronoun person - first, second, third - at each measurement period and tested for significance at the .01 and .05 levels.

7. This procedure admittedly assumed that there is a single developmental path the children were following in each conversational situation.

This correlation analysis was used to align the children in a developmental sequence in each conversational situation with overall performance as evidenced by the correlations being the basis for ranking. Then, within each developmental sequence, the trends for first, second and third person comprehension were compared.

The most plausible interpretation of the developmental sequence in which the child was person addressed (Table 1, pg. 11) does support the linguistic complexity hypothesis. For the least advanced children, Peter and Allen, there are occasional significant correlations which establish no clear-cut acquisition order. However, when these correlations are considered in the light of their overall erratic performance (and of their poor performance in the onlooker situation), these few significant results seem more to reflect the difficulties of statistically evaluating data on early language development rather than to reflect Peter's and Allen's true level of comprehension. Focussing on those children whose overall performance did indicate a progressive increase in comprehension, there is clearly a trend for first person to precede second and second person to precede third. Turning to the developmental sequence for the situation in which the child was onlooker (Table 2, pg. 12), one finds a different pattern, however. While here again, first person is comprehended earliest, it is second person and not third person which is comprehended last.

The acquisition order in the onlooker context differs from the predicted order specifically in the permutation of second and third person: the prediction that first person would be learned first was sustained. This latter fact is sufficient to provide support for at least two of the claims of the linguistic complexity hypothesis: in the onlooker situation, it was the more general Ego feature which was the first feature contrast discriminated; within the Ego contrast, it was the unmarked value, +Ego, which was learned first. The permutation of second and third person counters only one prediction of the linguistic complexity hypothesis, viz., in the onlooker situation, the children found marked Involvement easier to discriminate than unmarked Involvement. Since it is only in this single respect that the onlooker situation acquisition order fails to sustain the linguistic complexity hypothesis, one may ask how strong a case these data make against

Table 1: Developmental sequence for person addressed situation.

Subject	Testing Interval	Phi-correlation for my	your	his/her
Peter	1	.17	.13	.55**
	2	.51**	.44*	.27
	3	-.14	-.09	.32
Allen	1	.44*	.16	.53**
	2	.00	.11	-.36
	3	.29	.02	.29
Anne	1	.00	.02	-.05
	2	.27	.09	.00
	3	.49*	.67**	.14
Sally	1	.73**	.47*	-.15
	2	.69**	.28	.26
	3	1.00**	.55**	.30
Kenny	1	.91**	.63**	.66**
	2	.50*	.13	.10
	3	.91**	.91**	1.00**
Karina	1	.73**	.91**	.81**
	2	.81**	.81**	.81**
	3	.63**	.77**	.63**

** = significant at $\leq .01$; * = significant at $\leq .05$

Significance tests employed the formula $N\times\phi^2$ tested on a chi square distribution with 1 df (Walker & Lev, 1953).

Table 2: Developmental sequence for onlooker situation.

Subject	Phi-correlation for my	your	his/her
Peter	-.26	-.20	.13
Anne	.00	.06	-.05
Allen	.46*	-.38	-.02
Sally	.91**	-.15	.50*
Karina	.29	.44*	.52*
Jasper	.60**	.40	.59**
Jerry	.72**	.56*	.72**
Kenny	1.00**	1.00**	1.00**
Jill	1.00**	1.00**	1.00**

** = sig. at $\leq$ .01; * = sig. at $\leq$ .05.

hypothesis.[8] For several reasons, the answer to this question must be a very strong case indeed.

The linguistic complexity hypothesis makes the claim that linguistic complexity is the variable which constrains acquisition order. Since the data presented here evidence an instance in which this variable does not constrain acquisition order, the data are sufficient to reject the hypothesis.

As a reply to this evidence, of course, one might attempt to moderate the hypothesis - rather than abandon it - by arguing that, while linguistic complexity constrains acquisition order in most instances, there are certain exceptions to this rule in which other factors will be the determining variable. Such a reformulation of the hypothesis suffers, however, from the fact that it is totally ad hoc: it suggests no basis for deciding where such exceptions will occur and, more importantly, fails to indicate why these exceptions should exist. Beyond these deficiencies, though, there is a more profound reason for rejecting this reformulation. Specifically, it is possible to explain all aspects of the acquisition order of person pronouns in both conversational situations in terms of the relative complexity of the percepts which underlie the semantic concepts involved. Since a perceptual complexity hypothesis succeeds not only in accounting for the one result which the linguistic complexity hypothesis does not account for but also accounts equally well for all results which linguistic complexity does account for, there is clearly no motivation to retain linguistic complexity as an explanatory factor for any aspect of person pronoun acquisition order. Of course, the question remains whether linguistic complexity is viable as an explanation of the acquisition order of other relational words. We will take up this question shortly.

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8. It should be noted that the evaluation of the results have been weighted to make the best case for the predictive validity of the linguistic complexity hypothesis. The case suffers if the prediction that +,-Ego is learned before +,-Involvement is interpreted not as a prediction about the relative complexity of the features but as a necessary consequence of the prediction that the unmarked value is learned before the marked value (ftnt. 4, pg. 5). On this interpretation, the hypothesis makes only two claims - +Ego before -Ego and +Involvement before -Involvement - so that, in terms of evaluating the hypothesis, we find that it was only 50% successful - not 66% successful - in predicting acquisition order in the onlooker situation.

A perceptual account of person pronoun acquisition order.

The children's behavior during the comprehension tests suggested that the semantic concepts of being speaker (+Ego) and being involved in the communication dyad (+Involvement) have perceptual correlates which are discriminated before the related semantic concept is learned. For the concept of being speaker, there is evidence that the correlate percept is the auditory stimulus provided by the speaker: two children who did not yet know first person - Peter and Allen - tended to respond to the speaker anyway, at least when directly addressed. For the concept of involvement in the communication dyad, there is evidence that the correlate percept involves being the focus of the speaker's visual attention during conversation: in the onlooker role, the children characteristically tried to obtain visual cues from the speaker as a prerequisite for responding but these attempts diminished as understanding of second and third person progressed.

How can these percepts be invoked to explain acquisition order? We can answer this question if we posit that a percept functions to call the child's attention to the related semantic concept and that each percept does this with more or less success depending on its salience to the child in each conversational role.

The most salient perceptual fact about the speech event for the children, regardless of conversational context, appeared to be the auditory stimulus provided by the speaker. Whether the child was inside or outside the dyad, it was the auditory stimulus which prompted the children to orient visually to the speaker and the speech event. Since the auditory stimulus is correlate with the semantic concept of "being speaker," these observations explain why the children learned first person first in both conversational situations.

In contrast with the auditory stimulus produced by the speaker, the visual attention between speaker and person addressed which defined the dyad was a less salient feature of the speech event. But more than this, the salience to the child of this visual bond varied across conversational situations. When the children were in the dyad, they commanded the speaker's visual attention. The children reciprocated this attention and attended to the conversational situation rather than to objects and events outside the dyad. These considerations explain why the children, when in the person addressed role, found the concept

-Involvement (defined perceptually in terms of lack of the speaker's visual attention) relatively more complex than +Involvement. In the case of the onlooker situation, the facts were quite different. When outside the dyad, the children did not receive the speaker's visual attention and their aforementioned attempts to gain this attention indicated they were well aware of this fact. Thus, when the children were in the onlooker role, they first attended to their own non-involvement in the dyad and only secondarily concerned themselves with where the speaker was looking. These perceptual considerations explain why, in the onlooker situation, -Involvement was less salient to the children than -Involvement.

The foregoing analysis shows how we may, by considering perceptual complexity, obviate the need to appeal to linguistic complexity to explain the acquisition order of person pronouns. Is there evidence that perceptual complexity can displace linguistic complexity as an explanation for the acquisition order of other relational words? In a study of the acquisition order of on, in and under - somewhat different from the present study in that it is directed primarily to explaining the patterns of lexical overextension found in reponses to these words - E. Clark (1973) suggests that perceptual complexity may be a critical element determining the in, on, under ordering that she found. While making this observation, however, Clark does not proceed to develop perceptual complexity as an alternative hypothesis to linguistic complexity. This is an unfortunate limitation of her study, especially since the ordering of in before on is in direct conflict with the predictions of linguistic complexity (H. Clark, 1973).

Decentration in the acquisition of person pronouns.

The order in which person pronouns - and other relational words- are learned is hardly the only issue which must be dealt with by a theory of the acquisition of these words. Another, equally significant problem concerns how children come to appreciate the shifting reference which gives these words their relational character. The linguistic complexity hypothesis, of course, offers no solution to this problem. Granted, this is no reason to reject the hypothesis: one cannot fault an hypothesis about X for not being an hypothesis about Y. However, I have found that, by taking a broader view of the problem of semantic development - specifically, a view which encompasses the question of relational under-

standing one can arrive at an answer to a question which should be addressed by the linguistic complexity hypothesis but is not, viz., what prompts children to attend to the relatively more complicated semantic concepts they must learn? Before offering an answer to this question, though, I must spell out the problem involved in the child's attaining relational understanding.

It is a characteristic of non-relational as well as relational words that, while their meanings are fixed, their reference can shift. Thus, I can say apple in two different contexts and in each context refer to a different exemplar of this word. However, in the case of relational words, the issue of shifting reference takes on a rather different aspect. While I cannot say of one and the same piece of fruit that it is an apple in one context but not an apple in another, I can describe a particular bowl of apples as having more in one context but less in another. The possibility of applying concepts which are polar opposites to the selfsame referent, which is the distinctive characteristic of relational words, obtains also in the case of person pronouns. Whereas I am referred to as I when I am speaker, I am referred to as you when I am addressed and as he (she) when I am outside the dyad.

In the literature on person pronoun acquisition, the question of how children learn the relational nature of these words has been the object of frequent comment - and puzzlement. After all, it has been observed, the child is addressed as you by others who call themselves I . Why, then, don't children take you to mean themselves and I, those they address? Since this mistake would result in pronoun reversal in speech, it is obvious that few children make this error. As Shipley & Shipley (1969) have noted, most children use person pronouns in speech correctly from the outset.

I believe that the source of this puzzle resides in the fact that the only information thought relevant to its solution has been the information the child garners when he is directly addressed. If we instead posit that, prior to using person pronouns in speech, children attend to the way these words are used both when they are in the dyad and outside it, the pieces of the puzzle fall into place quite easily. That is, by attending to conversations both as person addressed and as onlooker, the child learns that first person does not refer only to

people speaking to him but to anyone who is speaking, that second person doesn't refer to himself exclusively but to anyone when they are addressed, and that third person refers to anyone - child included - when they are outside the dyad.[9]

If this solution is correct, then we should find person pronouns comprehended in both conversational situations before these words are used appropriately in speech. In the present study, it was possible to test this prediction for the 6 children who participated in both situations by using spontaneous speech production data which was taped at each test session. Specifically, comprehension in the onlooker situation (at measurement period 4) and in the person addressed situation (at measurement period 3) were compared with pronoun production (at measurement period 4). The production data of course included only those occurrences of pronouns which were not reversals. (In accord with Shipley & Shipley, I found only a handful of reversals in the speech samples.)

On the whole, this comparison yielded the expected results. As Table 3 (pg. 18) indicates, for second and third person, a statistically significant degree of comprehension in both situations was achieved before these pronouns were used in speech more than incidentally. Assuming that the children developed normally and did not begin to reverse these pronouns after my visits to them ceased, we may conclude that second and third person are comprehended in both comprehension situations before they are learned in speech. The frequent, apparently correct use of first person prior to full comprehension, which was not expected, may be attributed to an early game cue use of first person noted by Leopold (1949). Before comprehending first person, the children may have imitated phrases like mine, I wanna as part of mimicking a total action schema, for example, claiming ownership of an object.[10]

9. Pronoun reversals are characteristic of autistic children, a phenomenon sometimes ascribed to psychogenic causes (Bettelheim, 1967). An alternative explanation - and a plausible one given the perceptual behavior of these children (Hermelin & O'Connor, 1970) - is that autistic children do not attend to the conversations of others.

10. This suggestion gains support from the fact that the one child who understood my in neither context and one of the 3 who understood it only in one context were distinguished from the other children by a preference in speech for the genitive forms, forms which seem particularly likely to be used stereotypically. Interestingly, the children who did not yet understand my in both contexts were not distinguished by a reliance on their proper names for self-reference. All the children at one time or other used their own names where first person was appropriate.

Table 3: Comprehension in both situations versus production.

First person

# of children comprehending[a] my in-	who used f.p. singular incidentally in speech	who used f.p. singular more than incidentally[b]
neither situation	0	1
one situation	0	3
both situations	0	2

Second person

# of children comprehending your in-	who used s.p. singular incidentally in speech	who used s.p. singular more than incidentally
neither situation	2	0
one situation	2	0
both situations	2	0

Third person

# of children comprehending his/her in-	who used t.p. singular incidentally in speech	who used t.p. singular more than incidentally
neither situation	3	0
one situation	1	0
both situations	2	0

a. The criterion for "comprehending" was a phi-correlation significant at .05.

b. Use of a pronoun person was judged incidentaly if it accounted for less than 1% of the morphemes in the speech sample.

One way of interpreting the contribution that the onlooker situation makes to the child's understanding of person pronouns as relational words is in terms of Piaget's (1966) concept of decentration. The child's perspective on the communication dyad as person addressed is a limiting one which, if not corrected for, would produce an egocentric understanding of pronominal meanings centered on a single viewpoint. The onlooker situation is thus the vehicle whereby the child - through displacing his own body - is able to decenter so as to coordinate his own viewpoint with the viewpoints of others.

Having placed the onlooker situation in the framework of Piagetian theory, we are now in a position to understand how it may contribute to the child's discrimination of the semantic feature contrasts. I mentioned earlier that the linguistic complexity hypothesis raises an important question for which it provides no answer, viz., how do children come to attend to the more complex semantic concepts they must learn? The perceptual complexity hypothesis, taken together with the decentration strategy I have described, offers a natural solution to this problem. Decentering provides a device whereby the perceptual distortions inherent in a single viewpoint are overcome: as the child observes the learning situation from different perspectives, the relative salience of features and feature values is mitigated or totally reversed for the child.

In the case of person pronouns, there is evidence that decentering via the onlooker situation mitigated perceptual distortions in the following ways. First, the decentration strategy evidently moderated the salience of the auditory percept correlate with the concept of being speaker for the two children who had a response bias to speaker in the person addressed situation (Peter and Allen) did not manifest this bias in the onlooker situation. By diminishing the salience of the auditory percept, the decentration strategy would enable the children to appreciate that there are certain people who figure in the speech event but who do not speak and thereby illuminate for the children the contrast between being speaker (+Ego) and not being speaker (-Ego). Again, by diminishing the salience of the auditory percept, the decentration strategy would enable the children to attend to the relatively more subtle visual percept which underlies the feature, involvement in the communication dyad. Finally, the decentration strategy facilitated the children's appreciation of the contrast between +Involvement and - Involvement. I have already men-

tioned the children's behavior in the onlooker situation with respect to visual attention. In helping the children to appreciate that they were not the necessary recipient of the speaker's attention during conversation, the decentration strategy clarified for them the boundaries of the communication dyad as defined by the visual bond between speaker and person addressed and thereby called attention to the existence of the contrast +Involvement, -Involvement.

I have labelled decentration a "strategy" in the acquisition of person pronouns. Since the identification of strategies of semantic development has been a major concern of E. Clark (1973), we may ask how the decentration strategy compares with those strategies she has suggested. In Clark's work, the term "strategy" has been applied to response biases based on perceptual factors which determined early patterns of responding to certain relational words. While the application of the label "strategy" to these biases may be valid, the conception of strategy suggested is not a very valuable one in terms of explaining how semantic development progresses, in particular, explaining how the child moves beyond these biases to true semantic knowledge. The decentration strategy offers a possible explanation.

Conclusion.

The primary goal of this paper was to evaluate the linguistic complexity hypothesis as an explanation for the acquisition order of relational words using person pronouns as an example. The results establish that the linguistic complexity hypothesis is inadequate for this task. Further, the perceptual complexity hypothesis renders the former unnecessary.

Empirical evidence alone permits us to reject the linguistic complexity hypothesis. However, the theoretical gounds for rejecting the hypothesis should not be overlooked. The linguistic complexity hypothesis attempts to explain semantic development in terms of the formalisms of linguistic theory. As Bever (1970) has argued, however, such formalisms, e.g., markedness, of themselves explain nothing but only express certain facts about language which are themselves in need of an explanation. To invoke such formalisms to explain language development not only delays the real work which must be done but offers a totally vacu-

ous solution to an important problem.[11]

11. There are several reasons to argue that the linguistic complexity hypothesis is a misnomer because the complexity measures it invokes, in particular "markedness", are not really linguistic in the strict sense of that term (Sharpless, 1975).

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